Paper No. 156

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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GERVAIS DIONNE

Junior Party,[1]

v.

DENNIS C. LIOTTA,
RAYMOND F. SCHINAZI,
and
WOO-BAEG CHIO,

Senior Party.[2]

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Patent Interference No. 103,906

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FINAL HEARING: APRIL 18, 2001

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Before CAROFF, GRON, and LORIN, Administrative Patent Judges.

CAROFF, Administrative Patent Judge.

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[1]Patent 5,618,820, granted April 8, 1997, based on Application 08/487,452, filed June 7, 1995. Accorded the benefit of 08/190,203, filed February 1, 1994, now Patent 5,538,975, issued July 23, 1996; PCT/CA92/00321, filed July 24, 1992. Assignment to BioChem Pharma, Inc., Laval, Canada.

[2]Application 08/475,339, filed June 7, 1995. Accorded the benefit of 07/831,153, filed February 12, 1992. Assignment to Emory University.

FINAL DECISION

This interference involves a patent of the junior party, Dionne, and an application of the senior party, Liotta et al. (Liotta). According to the record before us, the Dionne patent is assigned to BioChem Pharma, Inc., and the Liotta application is assigned to Emory University.

The subject matter in issue relates to a method for treating a viral infection in a mammal by administration of an effective dose of either one or a combination of enantiomers referred to by the parties as (-)FTC and (+)FTC. This subject matter is more particularly defined in the two counts which are the basis of this interference. The counts are attached as an appendix to our decision.

In a Decision on Preliminary Motions dated Oct. 5, 1998 (Paper No. 91), the Administrative Patent Judge (APJ) issued a Show Cause Order against Dionne based on a conclusion that all of Dionne's involved claims 1-4 are unpatentable under 35 U.S.C. § 112 for lack of enablement, and under 35 U.S.C. § 101 for lack of utility. These issues had been raised by Liotta in its preliminary motion no. 1 for judgment (Paper No. 42). In response to the show cause order, Dionne requested that a final hearing be set to review the decision which served as the basis

for the show cause order, as well as to review the APJ's denial of Dionne's preliminary motion nos. 2, 5 and 6. See Paper Nos. 94 and 99. However, the matters raised in the parties' briefs only relate to Liotta's preliminary motion no. 1.

Accordingly, the sole issue before us for consideration is whether Liotta has established by a preponderance of evidence that Dionne's involved claims are unpatentable for lack of enablement, or for lack of utility.[3]

Each of the parties has presented a record, submitted exhibits, filed briefs and appeared, through counsel, at final hearing.[4]

No issue of interference-in-fact has been raised in this proceeding.

Opinion

With respect to the enablement issue, Dionne's claim 1 is representative of the claims in dispute and, therefore, is reproduced here for convenient reference:

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[3]We find it unnecessary to separately address the lack of utility issue since, in our opinion, Liotta has established that Dionne's claims are unpatentable for lack of enablement.

[4]Records, exhibits, briefs and reply brief will be respectively referred to in our decision, as appropriate, by the abbreviations R, X, B and RB, preceded by a letter representing the name of the submitting party (D or L), and followed by a pertinent page or exhibit number.

> 1. A method for treating a viral infection in a mammal comprising administering to a mammal in need thereof, an antiviral effective amount of (-)-Cis-4-amino-5-fluoro-1-(2-hydroxymethyl-1,3-oxathiolan-5yl)-(1H)-pyrimidin-2-one or a pharmaceutically acceptable salt, ester or salt of an ester thereof.

After a thorough review of the entire record in light of the opposing positions taken by the parties in their briefs, we conclude that Liotta's position with regard to the enablement issue more logically conforms with the facts and pertinent case law on the subject than does the position taken by Dionne. Accordingly, we conclude that Dionne's involved claims 1-4 are unpatentable under 35 U.S.C. § 112, first paragraph, for lack of an enabling disclosure essentially for the reasons set forth in Liotta's brief and the APJ's Decision on Preliminary Motions (pages 3-6). We present the following remarks to highlight the reasoning upon which our conclusions are based.

Initially, we observe that Dionne's brief and reply brief focus almost exclusively upon claim interpretation rather than on the factual evidence submitted by Liotta, and rely for the most part on In re Cortright, 165 F.3d 1353, 49 USPQ2d 1464 (Fed. Cir. 1999). In our view, this focus is misdirected. Dionne would like us to ascribe a narrow construction to the phrase "a viral infection," as used in the claims, so that it is limited only to infections by HBV (hepatitis B virus) and retroviruses such as

HIV (human immunodeficiency virus). However, on its face, the phrase is broader in scope and clearly embraces any viral infection and not only those caused by HBV and retroviruses such as HIV. The Dionne patent disclosure is consistent with this broader construction in that it refers to the treatment of viral infections broadly, and mentions HBV and retroviral infections merely as exemplary (col. 1, ll. 10-11; col. 3, ll. 4-12). The general rule is that claims are to be given their broadest reasonable interpretation consistent with the specification. In re Sneed, 710 F.2d 1544, 1548, 218 USPQ 385, 388 (Fed. Cir. 1983). Also, it is inappropriate to read limitations into the claims which appear only in the specification. Intervet Am., Inc. v. Kee-Vet Labs., Inc., 887 F.2d 1050, 1053, 12 USPQ2d 1474, 1476 (Fed. Cir. 1989); In re Prater, 415 F.2d 1393, 1405-05, 162 USPQ 541, 550 (CCPA 1969).

As for Dionne's primary reliance on Cortright, we note that the court in that case actually favored a broad construction of the claims at issue ("restore hair growth" not limited to producing a full head of hair) over a narrower construction ("restore hair growth" requires return of user's hair to its original state, that is, a full head of hair). In this light,

Cortright is viewed by us as being consistent with a broad construction of Dionne's claims here, Dionne's arguments to the contrary notwithstanding.

Other cases relied upon by Dionne are also deemed to be consistent with our broad claim interpretation. For instance, in North Am. Vaccine, Inc. v. American Cyanamid Co., 7 F.3d 1571, 1575-76, 28 USPQ2d 1333, 1336 (Fed. Cir. 1993), the claim expression "a terminal portion" was construed to have its normal meaning. Here, we also are ascribing a normal meaning to the phrase "a viral infection" as in effect referring to any viral source of mammalian infection. Here, unlike in North Am. Vaccine, Inc., the issue is the scope of the word "viral."

More to the point is In re Wright, 999 F.2d 1557, 1559 and 1561, 27 USPQ2d 1510, 1511 and 1513 (Fed. Cir. 1993). In Wright, the claim term "a pathogenic RNA virus" was interpreted to embrace any and all pathogenic RNA viruses.

Having made these initial observations, we now proceed with a more detailed discussion.

I. Claim Construction

As highlighted above, we agree with Liotta that the scope of Dionne's claims broadly encompasses the treatment of any viral infection in a mammal.

The starting point for interpreting language used in the claims is the claims themselves. North Am. Vaccine, Inc., 7 F.3d at 1575, 28 USPQ2d at 1336. Generally, words in a claim will be given their ordinary meaning unless there is a clear indication in the specification that the inventor intended to give those words a special meaning. Multiform Desiccants, Inc. v. Medzam, Ltd., 133 F.3d 1473, 1477, 45 USPQ2d 1429, 1432 (Fed. Cir. 1998); Key Pharms. Inc. v. Hercon Lab. Corp., 161 F.3d 709, 716-17, 48 USPQ2d 1911, 1917 (Fed. Cir. 1998). Here, as we already have indicated, the disputed term in Dionne's claims, "a viral infection," clearly embraces any viral infection, and it is matched by equally broad terminology in the specification. Further, we find nothing in the Dionne patent disclosure that clearly indicates that Dionne intended the term to have a narrower scope, viz. to mean only HBV and HIV-type infections. As we have indicated, it appears that infections caused by HBV and retroviruses such as HIV were intended to be merely exemplary of the viral infections covered by Dionne's disclosure. In this regard, we note that whenever the Dionne disclosure does refer to specific viruses it does so by employing terms (such as "for example" and "in particular") which are not exclusive of other viruses.

According to Dionne, other issued U.S. patents have equally broad claims relating to compositions and methods for treating "viral infections," but disclose or exemplify only a limited number of treatable viruses. (DB 6-9, 18). We give this factor little weight essentially for two reasons. First, the reliance by Dionne on the claim breadth allowed in other patents is of limited value since each case must be decided on its own facts. In re Angstadt, 537 F.2d 498, 502-03, 190 USPQ 214, 218 (CCPA 1976). In other words, the claim breadth allowed in other patents relates to the extent of enablement provided by the specification in each particular case, but has no direct bearing on matters of claim construction. Second, as noted by Liotta, if the meaning of a disputed claim term is clear from intrinsic evidence alone (the claims themselves, the written description, and the prosecution history), as we have found to be the case here, then resort to extrinsic evidence (other issued U.S. patents or expert testimony) is unnecessary and, in fact, contraindicated if clearly at odds with the claim construction mandated by the intrinsic evidence. Key Pharms., 161 F.3d at 716-17, 48 USPQ2d at 1917.

II. The Lack of Enablement Issue

It is settled that the first paragraph of 35 U.S.C.

§ 112 requires that the scope of the claims must bear a reasonable correlation to the scope of enablement provided by the specification to persons of ordinary skill in the art. Also, the scope of enablement varies inversely with the degree of unpredictability in the art. Wright, 999 F.2d at 1561, 27 USPQ2d at 1513; In re Vaeck, 947 F.2d 488, 495, 20 USPQ2d 1438, 1444 (Fed. Cir. 1991); Amgen Inc. v. Chugai Pharm. Co., 927 F.2d 1200, 1214, 18 USPQ2d 1016, 1028 (Fed. Cir. 1991); In re Angstadt, 537 F.2d at 501-02, 190 USPQ at 217-18; In re Fisher, 427 F.3d 833, 839, 166 USPQ 18, 24 (CCPA 1970).

Moreover, to be enabling, the specification of a patent must teach those skilled in the art how to make and use the full scope of the claimed invention without "undue experimentation." Factors which may be considered in determining whether a disclosure would require undue experimentation are:

> (1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.

Enzo Biochem, Inc., v. Calgene, Inc., 188 F.3d 1362, 1371-74, 52 USPQ2d 1129, 1135-38 (Fed. Cir. 1999).

Based upon the foregoing principles of law, we agree with

Liotta and the APJ that Liotta has established, prima facie, that

the scope of enablement provided by the Dionne disclosure is not commensurate with the broad scope of Dionne's claims.

Here, Liotta has introduced credible evidence that:

1. there are numerous pathogenic human and animal viruses. To wit, Fields Virology lists eighty-eight of the more common human viruses (LX-9, pp. 26-7) and ninety-eight of the more common animal viruses (LX-9, pp. 28-9).

2. at the request of Liotta, the U.S. National Institutes of Health (NIH) tested (-)FTC, (+)FTC, and the racemic mixture of both enantiomers against a total of eleven distinct viruses (LX-11). In each case, an EC_{50} value[5] was attained at a dosage of greater than 100 micromolar. According to Dr. Schinazi (LR 4-5) and Dr. Sommadossi (LR-198), these results confirm that the compounds in question do not exhibit broad spectrum antiviral activity in humans, much less in all mammals. Indeed, Schinazi and Sommadossi testified that if a compound exhibits an EC_{50} value at the 100 micromolar level or above, it's presumed to have no merit as an antiviral agent (LR 75, 109, 279). In other words, according to both Schinazi and Sommadossi the dosages used by NIH are appropriate in screening for antiviral activity.

[5]According to Dr. Schinazi, "EC_{50}" reflects the amount of virus reduced by 50 percent (LR 75-76).

3. it is accepted in the field of antiviral therapy that observation of activity against one virus, or even two viruses, is an insufficient basis on which to reasonably predict broad spectrum anti-viral activity, or even activity against related viruses. (Sommadossi Declaration, para. 15: LR-198).

In contrast to the concrete and substantial evidence of unpredictability presented by Liotta, we note that the guidance provided in the Dionne specification is very narrow, despite the wide breadth of the claims at issue and the unpredictability in the field of antiviral therapy. In this regard, Dionne's disclosure does not name any specific viruses against which activity is expected other than HBV or a retrovirus such as HIV. Also, the sole working example (Example 3) in the specification is limited to in vitro testing against one strain of HIV. Other than this, there is some evidence of in vitro activity against HBV as well (Declarations provided by Dr. Mansour and Dr. McDade: LX-1).

In view of the foregoing, we hold that Liotta has established by a preponderance of the evidence that the scope of enablement provided by Dionne's specification is not commensurate with the breadth of Dionne's claims. Thus, we conclude that Dionne's involved claims are unpatentable under the first

paragraph of 35 U.S.C. § 112.

According to Dionne (DRB 8-9), the NIH test data relied upon by Liotta is not conclusive because 100 micromolar is not the highest reasonable test dosage which could have been employed. To prove the point, Dionne refers to literature publications of Dr. Schinazi where tests were purportedly conducted at higher concentrations, e.g., 200 micromolar. We find this line of reasoning unpersuasive since, as explained by Schinazi (LR 178-184), activity may be related to toxicity at such high concentrations. In other words, according to Schinazi, compounds may be tested at concentrations exceeding 100 micromolar to determine toxicity, but such high doses are not a reasonable or practical basis for determining antiviral activity (LR 92-93, 107).

Dionne has not shown otherwise. In fact, Dionne has failed to adduce any rebuttal evidence showing antiviral activity for a sufficiently representative number of viruses, or showing that the compounds in question would exhibit practical antiviral activity against the viruses investigated at NIH if administered at dosages above 100 micromolar without also producing excessive toxicity with regard to a host cell or patient.

III. Alternative Finding

We have construed Dionne's claims broadly to encompass a method of treating any viral infection in a mammal. Having done so, we held those claims to be unpatentable under 35 U.S.C. § 112, first paragraph, because the scope of enablement provided by Dionne's specification is not commensurate with the breadth of the claims. However, even if we were to assume, arguendo, that the claims in question are limited to treatment of infections caused only by "HBV and retroviruses such as HIV,"[6] we would still hold Dionne's claims unpatentable for essentially the same reason. This is because the sole in vitro test of antiviral activity reported in Dionne's specification (Example 3) relates only to a single strain of a single retrovirus (HIV-1 strain RF). No other results are reported against any other HIV strains, let alone against any other type of retrovirus.

According to the uncontradicted testimony of Dr. Sommadossi (LR-198):

> It is accepted in the field of antiviral therapy that observation of activity against one virus, or even two viruses, is an insufficient basis on which to reasonably predict broad spectrum anti-viral activity, or even activity against related viruses. [Underlining added for emphasis.]

In view of Dr. Sommadossi's testimony, the evidence of

[6]This is the construction favored by Dionne (DRB-2).

antiviral activity provided by Dionne with regard to HIV-1 strain RF is not considered to be reasonably predictive of activity

against any other retroviruses. Thus, the scope of enablement is not commensurate with the breadth of the claims.

For all of the foregoing reasons, all of Dionne's involved claims are deemed unpatentable. Accordingly, judgment is rendered as follows:

Judgment

In view of our holding of unpatentability as to all of Dionne's claims corresponding to the two counts in issue, judgment as to the subject matter of these counts is hereby awarded to Liotta et al., the senior party.

Accordingly, on the record before us in this interference, Liotta et al. are entitled to a patent containing their claims 26-27, 31-40, 43-44 and 47-48 which correspond to the counts.

The party Dionne is not entitled to its patent claims 1-4 corresponding to the counts.

MARC L. CAROFF Administrative Patent Judge	)	
TEDDY S. GRON Administrative Patent Judge	)	BOARD OF PATENT APPEALS AND INTERFERENCES
HUBERT C. LORIN Administrative Patent Judge	)	

MLC:hh

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Interference No. 103,906

Appendix

Count 1

A method for treating HIV infection in humans comprising administering an effective amount of (-)-β-L-2-hydroxymethyl-5-(5-fluorocytosin-1-yl)-1,3-oxanthiolane, or its physiologically acceptable salt, optionally in a pharmaceutically acceptable carrier;

or

a method for treating a viral infection in a mammal comprising administering to a mammal in need thereof, an antiviral effective amount of (-)-Cis-4-amino-5-fluoro-1-(2-hydroxymethyl-1,3-oxanthiolan-5yl)-(1H)-pyrimidin-2-one or a pharmaceutically acceptable salt, ester or salt of an ester thereof.

The claims of the parties which correspond to the count are:

Dionne: Claim 1.

Liotta et al.: Claims 26, 31-34, 39, 43 and 47.

Count 2

A method for treating HIV infection in humans comprising administering an effective amount of (-)-β-L-2-hydroxymethyl-5-(5-fluorocytosin-1,3-oxathiolane, or its physiologically acceptable salt, optionally in a pharmaceutically acceptable carrier;

or

a method for treating HIV infection in humans comprising administering an effective amount of (+)-β-D-2-hydroxymethyl-5(5-fluorocytosin-1-yl)-1,3-oxathiolane, or its physiologically acceptable salt, optionally in a pharmaceutically acceptable carrier;

or

a method for treating a viral infection in a mammal comprising administering to a mammal in need thereof, an antiviral effective amount of a mixture of (-)-Cis-4-amino-5-fluoro-1-(2-hydroxymethyl-1,3-oxathiolan-5yl)-(1H)-pyrimidin-2-one or a pharmaceutically acceptable salt, ester or salt of an ester thereof, and (+)-Cis-4-amino-5-fluoro-1-(2-hydroxymethyl-1,3-oxathiolan-5yl)-(1H)-pyrimidin-2-one or a pharmaceutically acceptable salt, ester or salt of an ester thereof, wherein the (+)-enantiomer is present in an amount of no more than 5% w/w.

The claims of the parties which correspond to the count are:

Dionne: Claims 1-4.

Liotta et al.: Claims 26, 27, 31-40, 43, 44, 47 and 48.